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TITLE

A comprehensive geriatric assessment screening questionnaire (CGA-GOLD) for older people undergoing treatment for cancer

Whittle AK, Kalsi T, Babic-Illman G, Wang Y, Fields P, Ross P, Maisey N, Hughes S, Kwan W, Harari D

ABSTRACT

Oncology services do not routinely assess broader needs of older people with cancer. This study evaluates a comprehensive geriatric assessment and comorbidity screening questionnaire (CGA-GOLD) covering evidence-based domains and quality of life (EORTC-QLQ-C30). Patients aged 65+ attending oncology services were recruited into [1]Observational cohort (completed CGA-GOLD, received standard oncology care) [2]Intervention cohort (responses categorised 'low-risk', 'high-risk', 'possible need' by geriatricians). N=417 observational patients (1002 invited by post, 418 consented, age 73.9+/-5.4) completed CGA-GOLD in 11.7+/-7.9 minutes, 86.3% required no assistance, 3.1% overall missing responses. Multiple problems reported: hypertension(18.1%), diabetes(16.9%), dyspnoea on flat surfaces(27.6%), polypharmacy(46%), difficulty walking(14.9%), fatigue(40.5%), living alone(30.9%), social isolation(11.2%), recent functional dependence(27.8%), urinary incontinence(21.4%), falls(13.3%). 237/239 intervention patients completed CGA-GOLD and consecutive subsets examined. The doctor and nurse specialist independently identified same need level in 87.3% (high inter-rater reliability kappa=0.80), taking 1-2 min per questionnaire. Need level remained unchanged following hospital notes review against responses in 90%(75/83). 'Possible need' patients were telephoned with change in 29%(16/55) to low-risk and none to high-risk, confirming high need was not being missed. CGA-GOLD screening questionnaire was acceptable to older patients, feasibly administered in NHS cancer services, described comorbidities, CGA and QOL needs, and reliably identified higher risk patients requiring further input for optimal cancer treatment.

KEY WORDS comprehensive geriatric assessment (CGA), cancer, older, self-report questionnaire, screening, comorbidities, quality of life

KEY MESSAGES

Improving cancer care for older people is a healthcare priority

Comprehensive Geriatric Assessment (CGA) screening can identify comorbidities, and functional and psychosocial problems in older people undergoing cancer treatment

CGA-GOLD patient questionnaire was acceptable to older patients

Patients reported treatable comorbidities, functional and psychosocial difficulties and impact on quality of life

CGA-GOLD reliably identified low and high level of need, highlighting patients who would benefit from further optimisation and support

INTRODUCTION

Thirty-six percent of cancers in the UK are diagnosed in people aged 75+, and two-thirds are aged 65+ [Cancer Research UK 2009-2011]. Older patients (defined as 65+) may have comorbidities, functional impairments, and psychosocial factors which can affect decision making for cancer treatment (surgery, chemotherapy and radiotherapy), usually toward more conservative treatment [Department of Health (2013), Wildiers et al (2014), Owen et al (2014)]. Crucially, such wider needs can be optimised and supported if identified early, improving cancer treatment tolerance and survival [Kalsi et al (2015), McCorkle et al (2000), Hurria et al (2012), Caillet et al (2011)].

Currently UK National Health Service (NHS) cancer services have little routine assessment beyond performance status assessment and clinical judgement of oncologists [Lund et al (1990), Department of Health (2012)]. The widely used European Cooperative Oncology Group Performance Status (ECOG-PS) has been validated in younger populations to prognosticate survival and chemotherapy toxicity [Lund et al (1990), Gosney (2005)], but there is less evidence in older patients [Gosney (2005)]. ECOG-PS is a spot observation of physical function - level 2 ('requires some assistance') in an older patient may in fact relate to a number of treatable conditions. Use of brief tools without additional assessment in older people may lead to over-estimation of comorbidity or frailty, and hence under-treatment of cancer [Repetto et al (2002), Extermann et al (1998)].

Comprehensive geriatric assessment (CGA) is a process that assesses and optimises comorbidities, and psychological and functional capabilities of an older person. CGA is a 4 stage process: [1] screening [2] further assessment for those identified as having risk and needs [3] needs-based management (may involve other disciplines e.g. physiotherapy) and [4] follow-through to achieve patient-centred goals [Stuck et al (1993)]. Inpatient [Ellis et al (2011), Counsell et al (2005)] and outpatient [Reuben et al (1999)] geriatrician-delivered CGA has been shown to reduce mortality, functional dependency, and length of hospital stay, as have co-management models where geriatricians work with orthopaedic [Vidan et al (2005)] and surgical colleagues [Harari et al (2007)].

The US National Comprehensive Cancer Network, International Society of Geriatric Oncology (SIOG) and European Organisation for Research and Treatment of Cancer

(EORTC) all recommend that some form of CGA screening is performed for all older cancer patients [Hurria et al (2012), Extermann et al (2005), Pallis et al (2010)]. While several oncological publications have investigated CGA, very few have evaluated the process beyond initial screening [Wildiers et al (2014), Clough-Gorr et al (2010)]. Recent studies have demonstrated that geriatrician delivery of the full process (i.e. including optimisation) can influence oncology treatment decision-making [Caillet et al (2011), Aliamus et al (2011)] and improve patient outcomes with better chemotherapy tolerance [Kalsi et al (2015)]. Screening followed by in-depth assessment and management only for those at risk is now the paradigm of choice in the UK 5-year Cancer Strategy (2015) and oncological literature [Hurria et al (2012), Gosney (2005), Extermann et al (2005), Decoster et al (2015)]. Abbreviated screening tools have received scrutiny as they are quick to complete (approximately 5 minutes) but using such brief tools risks missing clinically important information. G-8 is the most studied, [Decoster et al (2015), Bellera (2012)] but lacks comorbidity assessment, an essential component as recommended by NCIN, [NCIN (2015)] and EORTC [Pallis et al (2011)]. The EORTC Elderly Task Force recommended minimum dataset for clinical trials includes G-8 but to be substantiated with comorbidities, function, and social data [Pallis et al (2011)]

Currently lacking in the CGA-oncology literature is a patient-reported screening tool that include more variables than abbreviated tools like G-8 but is sufficiently brief to be feasibly administered, and robust enough to identify needs and risk in order to trigger an effective management plan. Patient questionnaires have the benefit of highlighting patient concerns that will immediately inform the interaction and consultation between patient and provider in clinic. CGA patient questionnaires have been evaluated in oncology clinics [Clough-Gorr et al (2010), Hurria et al (2007), Ingram et al (2002)] and clinical trial settings [Hurria et al (2011)] in Europe and America, but these are lengthy assessments. Furthermore this approach has not as yet been tested in the UK. The CGA-GOLD ('Comprehensive Geriatric Assessment-Geriatric-Oncology Liaison Development') patient questionnaire was therefore developed to provide a practical screening tool for use in busy cancer services and this study evaluates aspects of feasibility and validity.

METHODS

CGA-GOLD questionnaire development

The aim was to select an assessment tool that was short and easy enough to use, but sufficiently comprehensive to provide enough information about the patient to guide clinical decisions on need for further assessment or intervention. Equally as

important is the ability of a tool to identify those patients who require no further intervention at the point of starting treatment. The CGA literature in older patients with and without cancer was reviewed to identify all tested domains as follows: physical function, comorbidities, medications, activities of daily living, mood, social situation, falls, nutrition, frailty, bladder and bowel problems.[Gosney (2005), Extermann et al (2005), Hurria et al (2011)]. A composite of evidence-based questions representing all of those domains from validated tools in the geriatric [Stuck et al (1993), Counsell et al (2005), Reuben et al (1999)], Harari et al (2008)] and oncology literature [Hurria et al (2012), Gosney (2005), Repetto et al (2002), Extermann et al (1998), Extermann et al (2005), Ingram et al (2002), Hurria et al (2005)] were then included in the 2-page CGA-GOLD questionnaire. Quality of life is valued by older patients as a cancer treatment goal [Pinquart (2002)] and although recommended as part of holistic assessment in the UK, [NCSI (2015)] is not systematically applied. The *EORTC-QLQ-C30* was therefore incorporated into CGA-GOLD; it is cancer-specific, multidimensional and has been validated in older people including as a component of CGA screening [Pallis et al (2011), Wedding et al (2012), Aaronson (1993)]. A Plan Do Study Act consultation was conducted with 10 consecutive patients aged 65+ in the Chemotherapy Day Unit applying NHS Institute methodology [<http://www.institute.nhs.uk> (2016)] and consisting of construct validity type questioning (how important/useful is this question) and unstructured feedback on what additional questions should be included. In addition the users on the steering group (older patients who were undergoing or had undergone chemo or radiotherapy) were consulted. As a result 2 questions were added ('is there anyone they can talk to about their cancer', and 'are they a caregiver for a dependent').

The project steering group, comprising oncologists, geriatricians, nurses, therapists, dieticians, palliative care, social care, patient representatives and voluntary organisations (Macmillan Cancer Support and Age UK) also contributed to the tested version.

An initial pilot was then conducted in 98 consented patients aged 65+ attending lymphoma clinic to identify any issues patients may have with completion. This showed a good rate of return (93%) with mean completion time of 11.5 ± 7.4 minutes. Most patients preferred to complete the questionnaire at home: 47% completed it at home and brought it to clinic, 7% completed it in clinic, and 42% returned it by post following their clinic visit. These preferences informed application of CGA-GOLD in the main study.

Design

Subjects were older people presenting to cancer services within South-East London Cancer Network. The setting was the London teaching hospital where they were assessed. Patients were referred locally (urban with relatively low socioeconomics) and regionally (South England). They were posted project information with time to consider participation prior to written consent with no reminders. The study was approved by the national and institutional research ethics committees conforming to the provisions of the Declaration of Helsinki. The CGA-GOLD questionnaire is attached as an appendix – it is not copyrighted and freely available for use.

First phase testing was conducted in a prospective observational cohort of patients aged 65+ (Ethics 09H71865). Patients completed the CGA-GOLD questionnaire and received usual care from oncology +/- any other clinical services. As this was an observation of usual care, CGA-GOLD data was not made available to oncologists. Questionnaires were posted and returned in a self-addressed envelope. Feasibility was evaluated by return rate, completion time, whether assistance was required, number of missed responses, and prevalence of problems identified by CGA screening.

Second phase testing was conducted in the subsequently funded interventional cohort study evaluating the impact of geriatrician-delivered CGA in patients aged 70+ undergoing cancer treatment (Ethics 11/LO/0695) [Kalsi et al (2015)]. This publication provides more information about the design of the observation and intervention cohort. CGA-GOLD responses were reviewed by the geriatric team as part of the intervention. CGA need was categorised as low-risk (no self-reported comorbidities, CGA problems or recent hospital admissions, and 'no/little difficulty' in function and QOL) or high-risk (≥ 1 comorbidity and/or CGA problems and/or 'quite a bit/very much' QOL or functional difficulties). Patients with 1-2 problems were 'possible need' and telephoned to clarify if these were already managed, could be managed remotely (e.g. dietician referral for weight loss), or required further in-depth assessment and treatment. A related publication reporting this interventional study showed that CGA-GOLD categorised 54% as high-risk, 29% low-risk, and 17% possible need [Kalsi et al (2015)].

Low-risk patients received no further input but the geriatricians informed the oncologists of their fitness. High-risk patients were invited for geriatrician-delivered CGA. To validate this method of using CGA-GOLD as a screening tool, a consecutive subset of questionnaires were independently reviewed and risk

categorised by a senior specialist registrar (SpR) trained in geriatric-oncology and a Clinical Nurse Specialist (CNS) trained in geriatrics, and inter-rater agreement measured. The clinicians reviewed hospital clinical records, and in a further subset evaluated whether this changed their risk category from reviewing the questionnaire alone. Validity was based on whether a change in decision-making occurred once supplementary information from the notes was examined. The outcome of telephone calls for those with 'possible need' was documented to further evaluate that risk category.

Data analysis

Demographics were collected using hospital electronic patient records. Data on CGA problems, time taken to complete the questionnaire and whether assistance was required were CGA-GOLD responses. Clinician risk assessments were data-based prospectively at the time of decision-making. Inter-rater reliability was evaluated with kappa. SPSS v.19 statistical package was used for data analysis.

RESULTS

418/1002 (42%) of people sent the project information signed the consent for the observational study (February 2010 – October 2012), and 417 completed CGA-GOLD first round with no prompting. Mean age was 73.9 years \pm 5.4 (range 65-92), 56.9% were men. The commonest cancers were: urological 24.4%(102), lung 17.9%(75), colorectal 17.5%(73), breast 14.6%(61), gynaecological 9.3%(39). Metastatic malignancy was diagnosed in 41.6% at recruitment. Table 1 lists the prevalence of problems elicited from CGA-GOLD; all the CGA and comorbidity questions are listed, and some from EORTC-C30. Missing data equates to non-responses.

Mean completion time was 11.7 \pm 7.9minutes, and 86.3% (345) reported they completed CGA-GOLD without assistance. The overall rate of missing responses was low at 3.1%. The questions most often left blank were driving (there was no 'not applicable' option), and listing medications. Patients reported marked rates of cardio-respiratory problems, diabetes, polypharmacy, recent decline in independent functioning, mobility difficulties, QOL impact, weight loss, incontinence, falls, and depression. Certain questions flagged up a medical problem that should immediately prompt further clinical assessment e.g. falls, pain limiting daily activities, dyspnoea on flat surfaces, current angina, poorly controlled hypertension or diabetes, bladder or bowel incontinence, depression, memory problems and delirium history. Combinations of factors provided more in-depth information (e.g. nutritional risk plus

difficulty walking outside plus living alone, diarrhoea plus functional dependency, depression plus lack of social support), that would indicate a current need for further multidisciplinary support (e.g. occupational/physiotherapist, dietician, psychological support) .

Thirty-eight percent (239/638) of people sent the project information returned the consent for the interventional cohort (August 2011-February 2013) and 237/239 completed the questionnaire (age 76.6 +/- 4.9, 70.7% male). The CNS and SPR independently reviewed the same questionnaires for 71 patients. The same decision was made in 87.3%(62/71) of patients with high inter-rater reliability (kappa=0.80). The SpR and CNS independently reviewed questionnaires against the clinical notes and the results are presented in Table 2. Decision-making remained unchanged in 89% (73/82) for SPR, and 90% (75/83) for CNS. Fifty-five patients were called to clarify possible need. 29% (16/55) were changed to low risk, and none to high risk, confirming that high need was not being missed. Change to low risk was generally because identified needs were being managed appropriately by others (e.g. already seeing dietician for weight loss, stroke disease already on appropriate management), or because symptoms had resolved.

Discussion

This study demonstrates that the CGA-GOLD questionnaire is a feasible and useful CGA screening method for older people presenting to UK cancer services with the following findings:

- Self-completed patient focussed tool including comorbidities, CGA problems and QOL
- Acceptable to older patients (99% return) who largely (86%) completed it without assistance
- Brief (12 minutes)
- Low number of missing responses (3%)
- Feasibly completed at home by post or in clinic
- Identifies low risk patients who do not need further medical review
- Identifies specific problems that can be addressed by prompt clinical assessment in cancer clinic (e.g. BP control, polypharmacy, cardiac review)
- Clarifies need for further in-depth CGA and/or multidisciplinary involvement
- Describes CGA problems early on that may affect how people cope with cancer treatment, but can be addressed through local resources

Review of questionnaire responses by geriatrician nurse and registrar and phone calls demonstrated reliable risk categorisation even without notes review. Patients deemed to be high risk were not being missed. Provider time to review and risk categorise the questionnaire was generally 1-2 minutes. Low risk patients were quickly classified as not needing intervention, similarly high risk patients with multiple comorbidities and functional difficulties were rapidly categorised for the optimisation pathway (which in this project was geriatrician-delivered). The intermediate group with a few problems (e.g. 1-2 comorbidities, mild functional difficulties) needed to have these discussed to see if they were ongoing. For this project this was done by a short phonecall, but within a service setting this discussion and any required intervention (e.g. dietician for weight loss, medication review) could practically occur in the oncology clinic in context of discussing cancer treatment.

The high inter-rater reliability between the two disciplines additionally supports the role of nurse specialists in administering and interpreting CGA-GOLD within cancer services. Service models where CGA screening is done by nurses or therapists with escalation for those requiring further input have been demonstrated in diverse healthcare settings [(Morilla-Herrera et al (2016), McCusker J et al (2003), Harari et al (2007), Harari et al (2007)], and specifically in older cancer patients undergoing outpatient chemotherapy [Cancer Services Coming of Age, (2012), Kalsi et al (2015)], and being admitted to oncology wards [Klepin et al (2011), Hamaker et al (2011)]. The clinical nurse specialist in this study was trained in older persons care [Morilla-Herrera et al (2016)] and therefore could implement supportive pathways of care for those who screened as higher risk, but the medical optimisation was delivered by geriatricians and oncologists. Benefit of nurse CGA on clinical outcomes has been widely demonstrated, but is dependant on the role working within a multidisciplinary team.

Geriatric liaison to oncology services have been nationally resourced in a few countries (e.g. France, Belgium, Netherlands) but in many others (including the UK) this is not established. The method of assessing level of need was therefore largely protocolised according to the questionnaire responses for greater generalisability, and so if needed can also be applied by clinicians who are not geriatricians such as oncology junior doctors and nurse specialists. In this situation the escalation pathways would need to be well-defined based on availability of local services. Patients identified as having more comorbidities and/or CGA needs would ideally be further reviewed by a geriatrics service rapidly in order to not delay cancer treatment. Geriatric-oncology service delivery models are beginning to emerge in the UK

[Cancer Services Coming of Age, Department of Health (2012)] with clinical pathways linking screening tools to ongoing care [Kalsi et al (2015)].

If dedicated geriatric liaison is not available however, a structured risk assessment such as CGA-GOLD can form a basis for rapid referral pathways to generic geriatric services (e.g. geriatrician CGA clinics, memory clinic, falls service), other medical specialities (e.g. cardiac, respiratory, diabetes), primary care, therapies, or social support.

This study describes the coexisting needs of older people with cancer of all types. The patient-reported functional difficulties in activities of daily living, fatigue, poor nutrition and social isolation (11% had no-one to help out even for a few days) are all likely to impact how patients cope with treatment, including travelling to hospital appointments. Early identification of these issues should trigger arrangements for more practical support (e.g. home food delivery, social services for formal care packages, subsidised car transport, charitable organisations for befriending). Prevalent problems such as urinary incontinence (a common CGA finding as previously documented in older cancer patients) [Wedding et al (2007)], falls (likewise 24% rate documented in oncology literature [Hurria et al (2005)], and low mood can severely impact QOL, but are often overlooked in routine care. These can however be effectively managed alongside cancer treatment through relevant services (e.g. falls clinic, community continence services, GP/counselling). Several patients had chronic diseases that may decompensate as they undergo treatment (e.g. diabetes control worsening on steroids, medicated BP dropping with dehydration and causing dizziness/falls). If cancer services are aware of these comorbidities through CGA screening at the start of surgical and oncological treatment, they can proactively put in place measures to reduce toxicity [Kalsi et al (2015)]. An important aspect of this proactive care is to advise patients of how to deal with potential decompensations during and after treatment, for example (a) arranging insulin regimens with diabetic patients so they do not suffer hypoglycaemia with reduced oral intake (b) informing hypertensive patients on symptoms of postural hypotension and how to reduce their antihypertensive medication dosage should they occur (c) providing pelvic floor exercises, dietary/fluid, containment and skin care advice to patients at risk of developing urinary and faecal incontinence from chemo or radiotherapy.

Most published cancer comorbidity studies are retrospective using data derived from cancer registers rather than directly from patients. CGA-GOLD for instance asked whether patients were short of breath walking on flat surfaces rather than if they had

a diagnosis of lung disease, thus capturing relevant clinical impact. Although not formally measured, many comorbidities identified in this study were newly detected. A recent US National Cancer Institute Index study found that 10.1% of breast cancer patients had ≥ 1 undetected comorbidity associated with older age and tumour factors; following adjustment for these factors undetected comorbidity remained significantly associated with lower odds of receiving adjuvant chemotherapy in stage 1-111 cancer [Griffiths et al (2014)] This reinforces the message that comorbidity should be medically optimised first before influencing decisions towards less aggressive treatment. Older people are also likely to have chemotherapy discontinued or dose-reduced for low-grade toxicities, presenting a further role for CGA optimisation during treatment in order to increase the odds of completion of curative treatment [Kalsi et al (2014)]

This study is limited by being performed in a single site and the results require validation in other settings. The number of assessors of validity and reliability was limited to two and though systematic methods were used, other assessors may potentially have assessed responses differently. Comorbidities depended on reliable self-report; however a recent study compared self-reported comorbidity using a patient questionnaire against traditional medical interview in patients with skin cancer and showed that the questionnaire identified comorbidity in more patients (88.6% versus 79.5%), and when there were discordant observations, was 5 times more likely to identify the comorbidity [Lee et al (2015)]. The majority of questionnaire responses were validated as reliable having been taken from evidence-based sources, but the memory question could be reinforced with another measure such as a clock drawing test [Shulman (2000)], though that would have lengthened the completion time. The clinical validation of CGA GOLD used the hospital notes as corroboration with the limitation that some of the data provided within the CGA-GOLD may not be within the notes (though this is also what makes it potentially useful).

This study demonstrates the performance of a CGA screening tool in the pressurised clinical setting of a national health service and adds to existing data on screening tools. There are now consistent recommendations from scientific consensus groups and national bodies to use this type of screening in older people to identify fit patients and to optimise those with identified problems. Further research should focus on service development around the implementation of screening tools within health care systems. The processes and outcomes of integrating CGA-GOLD (and any other relevant tools) into oncological clinical practice including how further medical,

comorbidity and/or multidisciplinary management is triggered needs further evaluation. Outcomes would include whether:

- oncology decision making is altered by this approach
- the quality of patient-centred data informing oncology and surgical MDT meetings and clinics is enhanced
- patients are more likely to complete treatment as planned
- toxicity severity and patient quality of life impact is reduced

Improved cancer care for older people has become a healthcare priority in the UK and elsewhere. The 2015 SIOG consensus recommends that a screening tool be used in all oncology practices to identify fit older people who should receive full treatment, particularly in view of population studies showing an overall tendency to undertreat cancer in older people (Decoster et al, 2015). The UK Department of Health's report 'Cancer Services Coming of Age' [Department of Health (2012)] highlights the need to improve outcomes for older people with cancer and calls for innovative change. It stresses the benefits of engaging elderly care specialists in cancer care, and utilising CGA, as an assessment that can impact positively on treatment decision making and general quality of care through clinical interventions. Not all older people with cancer have complex needs, requiring specialist assessment and intervention and so the use of a screening questionnaire would assist the allocation of finite resource to the most appropriate patient group, without compromising care. The CGA-GOLD questionnaire has demonstrated it is a valid and reliable tool that can be feasibly implemented to the UK NHS setting.

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Table 1 CGA items and prevalence from CGA-GOLD responses in observational cohort

CGA item	Question	Prevalence of yes responses N = 417 % (n)	Missing data % (n)
Cognition	<i>"Do you have memory problems?"</i>	8.4 (35)	1 (3)
Delirium history	<i>"Have you ever had episodes of feeling confused?"</i>	11.6 (48)	1 (5)
Depression	<i>"During the past week, did you feel depressed?"</i> Depression: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	10.5 (43)	3 (11)
Falls	<i>"Have you had 1 or more falls from standing or sitting over the past 6 months?"</i>	13.3 (55)	1 (4)
Visual impairment	<i>"Do you have poor vision that limits what you can do?"</i>	11.4 (47)	1 (4)

Urinary incontinence	<i>"In the past year have you had urinary leakage that has bothered you?"</i>	21.4 (87)	3 (11)
Constipation and diarrhoea	<i>"Have you been constipated?"</i> <i>"Have you had diarrhoea?"</i> Bowel difficulties: responding as "quite a bit" or "a lot" to either question EORTC QLQ-C30	16.5 (67) 7.2 (29)	3 (12) 4 (15)
Nutritional risk	<i>"Have you lost weight or been eating less in the last 6 months?"</i>	47.4 (195)	2 (7)
Dependency with Basic activities of daily living (BADL)	6 BADL questions : <i>"Do you have difficulty with..."</i> - <i>Bathing</i> <i>stairs</i> <i>toileting</i> <i>Transfers</i> <i>Dressing</i> <i>Walking</i> Difficulty defined as reporting "quite a bit" or "very much difficulty" BADL dependent: "quite a bit" or "very much" in ≥1 BADL	6.0 (24) 17.3 (71) 4.0 (16) 4.7 (19) 4.7 (19) 14.8 (61) 23.7 (98)	4 (15) 2 (8) 5 (19) 3 (12) 3 (12) 2 (7) 1 (4)
Dependency with Instrumental activities of Daily Living (iADL)	4 iADL questions: <i>"Do you have difficulty with..."</i> <i>Shopping</i> <i>Driving</i> <i>Finances</i> <i>Public transport</i> Difficulty defined as reporting "quite a bit" or "very much difficulty" iADL dependent: "quite a bit" or "very much" in ≥1 iadl	15.7 (62) 7.0 (24) 6.7 (27) 15.4 (61) 20.4 (84)	6 (23) 18 (76) 4 (15) 5 (22) 2 (7)
Poor mobility	<i>"Do you have trouble taking a short walk outside the house?"</i> Poor mobility: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	13.7 (56)	2 (9)
Limited exercise Tolerance	<i>"Do you have trouble taking a long walk outside the house?"</i> Difficulty with exercise: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	45.5 (187)	2 (7)
Lives alone	<i>"What is your living situation?"</i> Lives alone Live alone, with partner, with someone else	30.9 (127)	2 (7)
QOL impact on family life	<i>"Has your physical condition or medical treatment interfered with your family life?"</i> Difficulty with family life: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	20.3 (82)	4 (15)
QOL impact on social activities	<i>"Has your physical condition or medical treatment interfered with your social activities?"</i> Difficulty with social activities: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	30.5 (123)	4 (15)
No practical support if needed	<i>"Is there a friend, relative or neighbour who would take care of you for a few days if necessary?"</i>	11.2 (46)	2 (7)
Recent decline in independence	<i>Over the past month have you needed more help than usual to take care of yourself?</i>	27.8 (115)	1 (4)
Caregiver status	<i>Are you a caregiver for someone who depends on you?</i>	8.9 (36)	3 (13)
No emotional social support	<i>"Is there a friend or relative you feel you can talk to about your cancer and cancer treatment?"</i>	6.1 (25)	1 (6)
Pain limiting activities	<i>"Do you have pain which interferes with your daily activities?"</i>	12.5 (51)	3 (11)

	Limiting pain: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30		
Poor sleep	<i>"Have you had trouble sleeping?"</i> Sleep difficulty: "quite a bit" or "very much" versus "no difficulty" or "a little difficulty" EORTC QLQ-C30	24.9 (102)	2 (9)
Fatigue	3 questions related to fatigue: <i>during the past week "did you need to rest?", "have you felt weak?" and "were you tired?"</i> . Fatigue: "quite a bit" or "a lot" to ≥ 1 question and versus "not at all" or "a little" to all 3 questions. EORTC-QLQ-C30	40.5 (167)	1 (6)
Polypharmacy (≥ 5 regular medications)	<i>"Please list the names of ALL the medications that you are taking"</i>	46.0 (165)	14 (59)
	<i>Do you think you are having any symptoms due to your medications?</i>	29.3 (117)	5 (19)
Hospital admissions	<i>"In the previous 12 months, have you been admitted to hospital?"</i>	1-2 times 46.8 (185)	6 (23)
		≥ 3 times 12.7 (50)	6 (23)
Diabetes	<i>"Do you have diabetes?"</i>	16.9 (68)	4 (16)
Poorly controlled hypertension	<i>"Is your blood pressure generally high when the doctor or nurse checks it?"</i>	18.1 (74)	2 (9)
Ischaemic heart disease	<i>"Do you suffer from angina or have ever had a heart attack?"</i>	12.1 (50)	1 (6)
Stroke	<i>"Have you ever had a stroke?"</i>	6.8 (28)	1 (4)
Lung disease	<i>"Do you have chronic lung problems?"</i>	17.8 (73)	2 (9)
Limiting shortness of breath	<i>Do you get short of breath walking on flat surfaces?</i>	27.6 (113)	2 (8)

Table 2. Decision-making on need for in-depth CGA based on CGA-GOLD screening

SPR Decision	CNS Decision			
		No CGA need	Need CGA	Maybe needs
	No CGA need	14	1	2
	Need CGA	1	29	3
	Maybe needs	1	1	19

APPENDIX 1. CGA questionnaire

South-East London Cancer Network / Department of Ageing and Health Guy's and St Thomas' NHS Foundation Trust

NAME	DOB
Date	

In the previous 12 months have you been admitted to a hospital?

- Not at all ☐
- 1 -2 times ☐
- 3 or more times ☐
- Don't know ☐

Do you have diabetes?

I do not have diabetes ☐

My diabetes control is usually good (blood sugars below 10) ☐

My diabetes is usually fair (blood sugars 10 or above) ☐

Don't know ☐

Is your blood pressure generally high when the doctor or nurse checks it?

- No ☐
- Yes ☐
- Don't know ☐

Do you suffer from angina or have you ever had a heart attack?

No ☐

Yes ☐

Don't know ☐

Have you ever had a stroke?

No ☐

Yes ☐

Don't know ☐

Do you have chronic lung problems?

No ☐

Yes ☐

Don't know ☐

Do you get short of breath walking on flat surfaces?

No ☐

Yes ☐

Don't know ☐

Have you had 1 or more falls from standing or sitting over the past 6 months?

No ☐

Yes ☐

Don't know ☐

Do you have significant memory problems?

No ☐

Yes ☐

Don't know ☐

Have you ever had episodes of feeling confused?

No ☐

Yes ☐

Don't know ☐

Do you have poor vision that limits what you can do?

No ☐

Yes ☐

Don't know ☐

Over the past month have you needed more help than usual to take care of yourself?

No ☐

Yes ☐

Don't know ☐

Do you have difficulty with any of the following?

	Not at all	A little	Quite a bit	A lot
Bathing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climbing stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Getting to the toilet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moving from bed to chair or standing up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dressing yourself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Driving <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Taking public transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shopping for food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Managing financial affairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Is there a friend, relative or neighbour who would take care of you for a few days if necessary?

No ☐

Yes ☐

Don't know ☐

Is there a friend or relative you feel you can talk to about your cancer and cancer treatment?

No ☐

Yes ☐

Don't know ☐

What is your living situation?

Live alone ☐

Live with partner ☐

Live with someone other than partner ☐

Live in sheltered housing ☐

Are you a caregiver for someone who depends on you?

No ☐

Yes ☐ Who? _____

In the past year have you had urinary leakage that has bothered you?

No ☐

Yes ☐

Don't know ☐

Have you lost weight or been eating less in last 6 months?

No ☐

Yes ☐

Don't know ☐

Please list the names of ALL the medications that you are taking

Don't know ☐

Do you think you are having any symptoms due to your medications?

No ☐

Yes ☐

Don't know ☐

Are there any other problems that you would like to tell us about?

THANK YOU

[2] EORTC QLQ C30 (V3) - Validated quality of life questionnaire –

We are interested in some things about you and your health. Please answer all of the questions yourself by circling the number that best applies to you. There are no “right” or “wrong” answers.

Not at all A Quite Very

all little a bit much

1. Do you have any trouble doing strenuous activities 1 2 3 4

like carrying a heavy shopping bag or a suitcase

- | | | | | |
|---|---|---|---|---|
| 2. Do you have any trouble taking a <u>long</u> walk? | 1 | 2 | 3 | 4 |
| | | | | |
| 3. Do you have any trouble taking a short walk
outside of the house? | 1 | 2 | 3 | 4 |
| | | | | |
| 4. Do you need to stay in bed or a chair during the
day? | 1 | 2 | 3 | 4 |
| | | | | |
| 5. Do you need help with eating, dressing, washing
yourself or using the toilet? | 1 | 2 | 3 | 4 |

During the past week:

- | | | | | |
|---|---|---|---|---|
| 6. Were you limited in doing either your work or
other daily activities? | 1 | 2 | 3 | 4 |
| | | | | |
| 7. Were you limited in pursuing your hobbies or other
leisure time activities? | 1 | 2 | 3 | 4 |
| | | | | |
| 8. Were you short of breath? | 1 | 2 | 3 | 4 |
| | | | | |
| 9. Have you had pain? | 1 | 2 | 3 | 4 |
| | | | | |
| 10. Did you need to rest? | 1 | 2 | 3 | 4 |
| | | | | |
| 11. Have you had trouble sleeping? | 1 | 2 | 3 | 4 |
| | | | | |
| 12. Have you felt weak? | 1 | 2 | 3 | 4 |

13. Have you lacked appetite?	1	2	3	4
14. Have you felt nauseated?	1	2	3	4
15. Have you vomited?	1	2	3	4
16. Have you been constipated?	1	2	3	4
17. Have you had diarrhoea?	1	2	3	4
18. Were you tired?	1	2	3	4
19. Did pain interfere with your daily activities	1	2	3	4
20. Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
21. Did you feel tense?	1	2	3	4

During the past week:

22. Did you worry?	1	2	3	4
23. Did you feel irritable?	1	2	3	4
24. Did you feel depressed?	1	2	3	4

25. Have you had difficulty remembering things? 1 2 3 4

26. Has your physical condition or medical treatment
interfered with your family life? 1 2 3 4

27. Has your physical condition or medical treatment
interfered with your social activities? 1 2 3 4

28. Has your physical condition or medical treatment caused
you financial difficulties? 1 2 3 4

For the following questions please circle the number between 1 and 7 that best applies to you

29. How would you rate your overall health during the past week?

1 2 3 4 5 6

Very poor

Excellent

30. How would you rate your overall quality of life during the past week?

1 2 3 4 5 6

Very poor

Excellent

Did you need someone to assist you in completing this questionnaire?

No ☐

Yes ☐

About how long did it take you to complete the questionnaire?

_____ minutes

Don't know ☐

THANK YOU

